



Cycling mobility in The Netherlands

An overview

Tom Godefrooij > 25 October 2012

Content

- > Dutch context: some statistics
- > Cycling-inclusive policy development
- > Planning and design for cycling
- > Design guidelines
- > Bicycle parking
- > Intermodality
- > Other aspects of Dutch cycling culture

Dutch context: some statistics

Dutch context

- > Traditional high levels of cycling
- > Decrease of cycling 1950 – 1975
- > Revaluation of cycling from 1970's on
- > National transport strategy 1989
 - > Equilibrium accessibility, safety and livability
 - > Bicycle Master Plan
- > Cycling-inclusive planning
 - > Integral part of local and regional transport planning
 - > Re-confirmed in National Transport Strategy 2006

Cycling in European cities in the 20th century

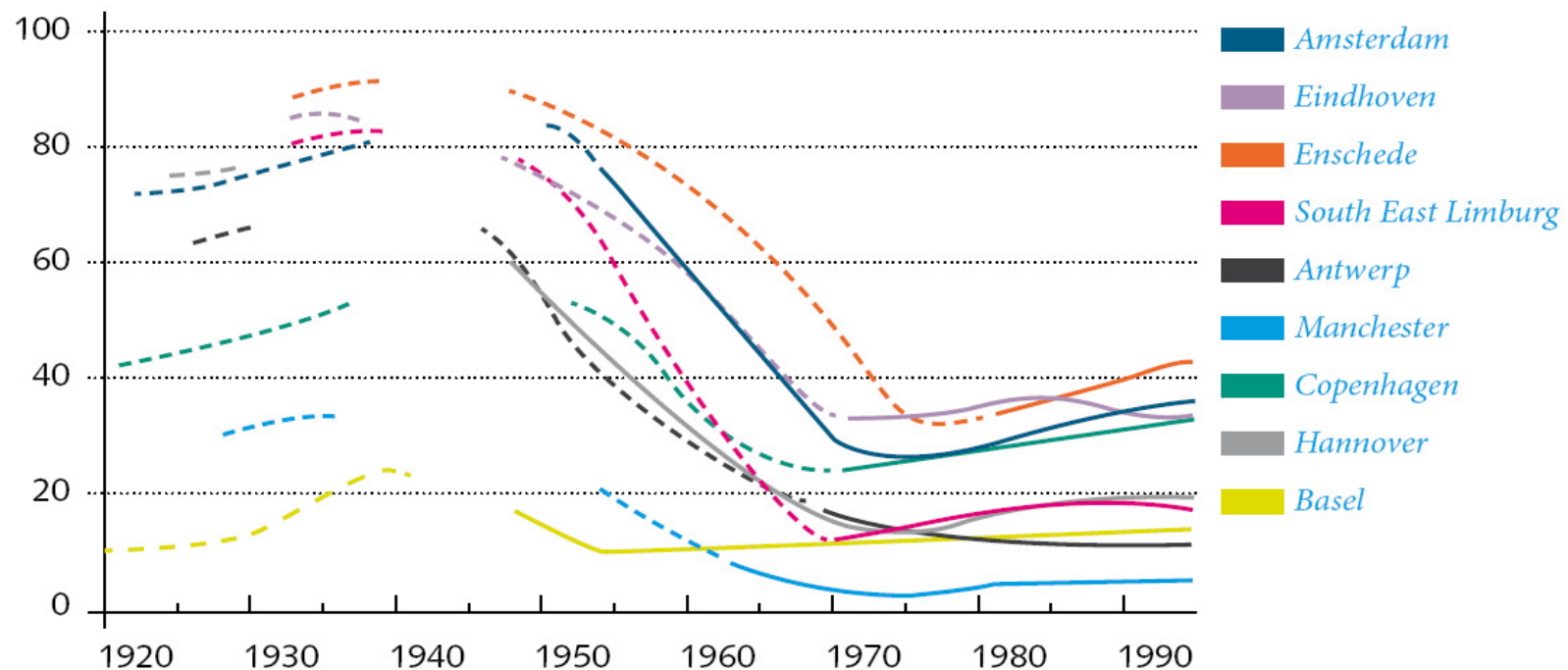


Figure 5: Historical development in bicycle share in 9 European cities Source: A.A. ALbert de la Bruheze and F.C.A. Vervaart. Bicycle traffic in practice and policy in the twentieth century, 1999

Mobility in the Netherlands

Netherlands, high car density/km²

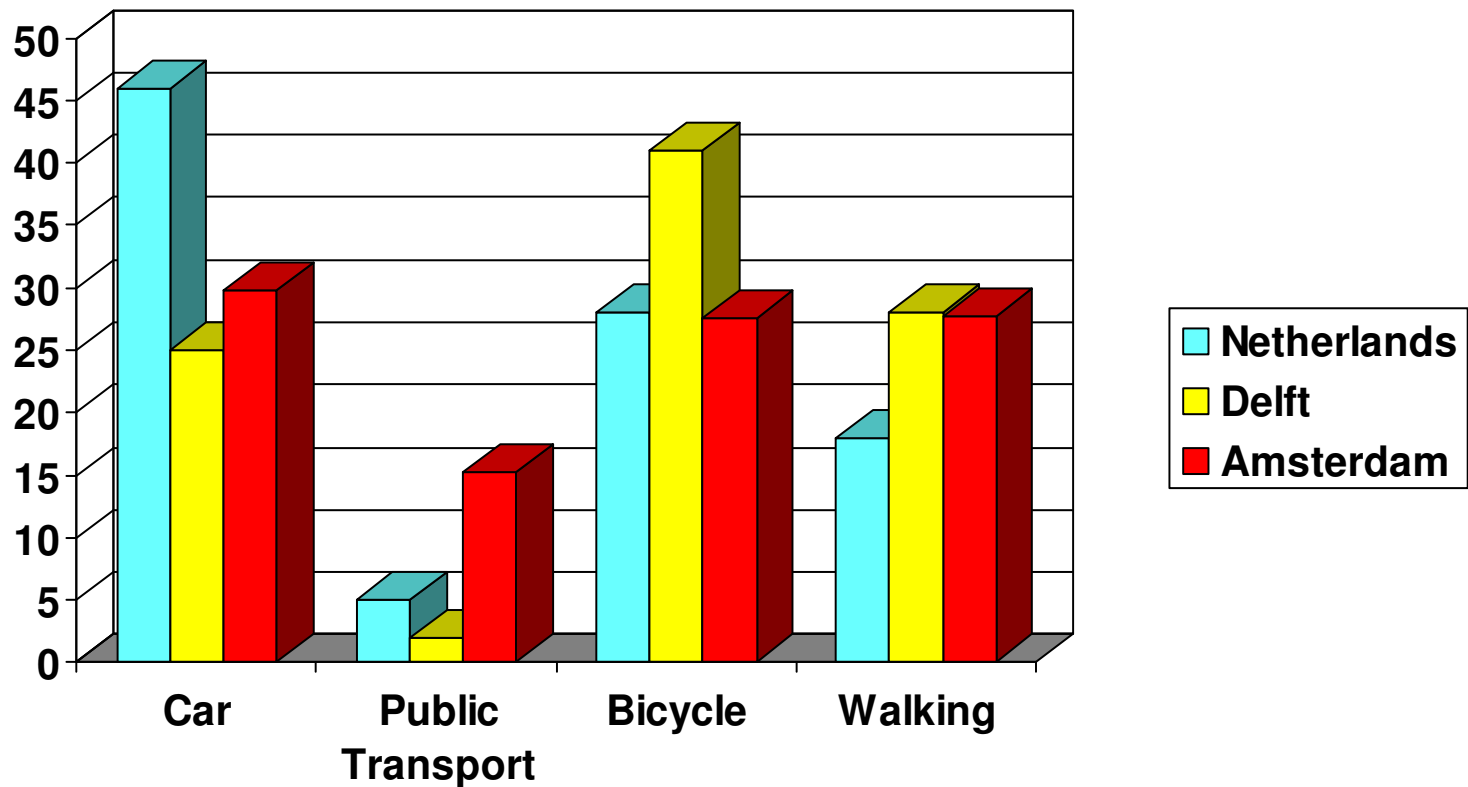
On average 3.2 trips per day:

- > 1 trip car driver
- > 0.8 trip bicycle
- > 0.6 trip walking
- > 0.5 trip car passenger
- > 0.2 trip public transport
- > 0.1 trip other

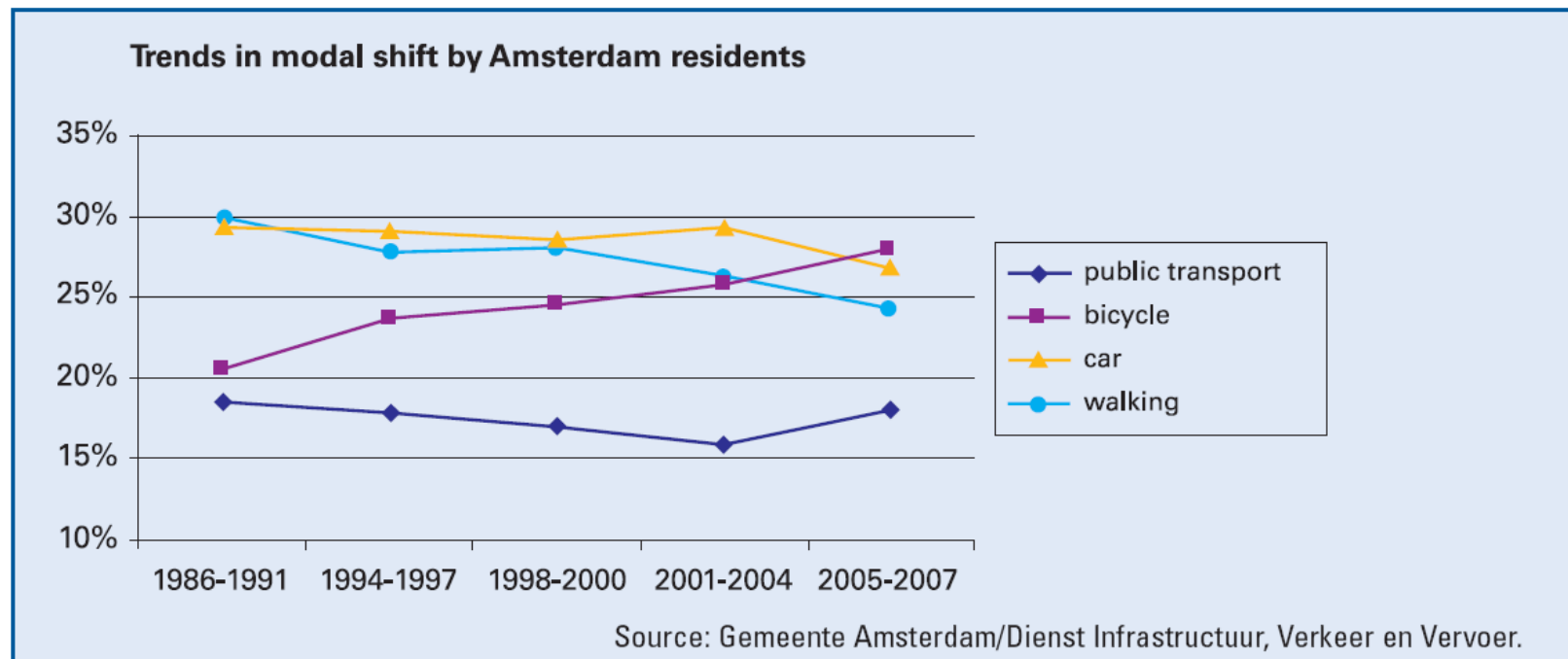


In Top-5 most road-safe countries

Mobility in The Netherlands



Modal split development in Amsterdam



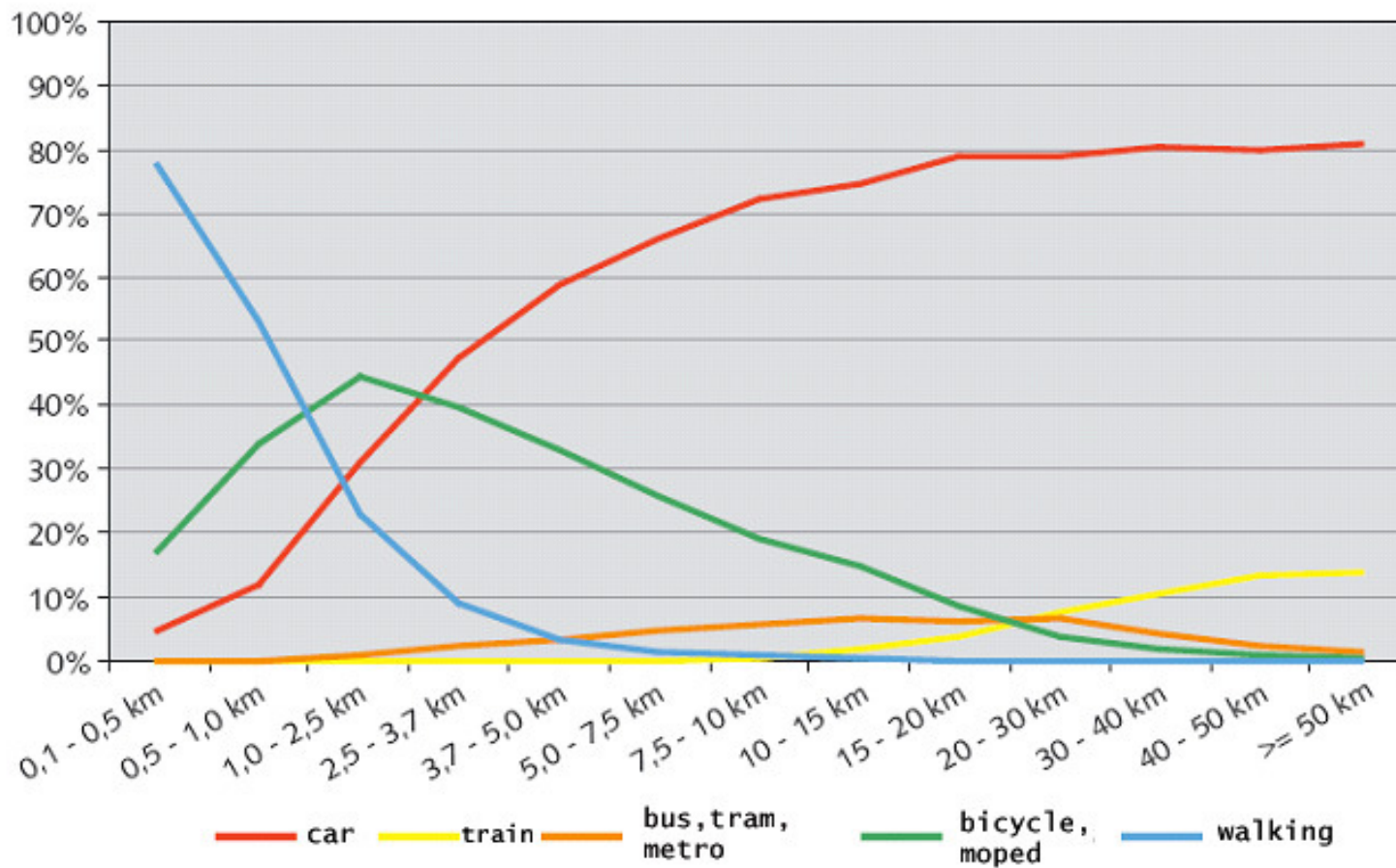
Modal split trips according to distance

(km's)	< 7,5	7,5-15	> 15	overall
Car driver	35%	74%	79%	48%
Driver	23%	50%	54%	32%
Passenger	12%	24%	25%	16%
Public Transport	2%	7%	14%	5%
Train	0%	1%	9%	2%
Bus/tram/metro	2%	6%	5%	3%
Bicycle	35%	15%	3%	27%
Walking	26%	0%	0%	18%
Other	2%	3%	4%	2%
Share distance	70%	12%	18%	

Mode choice bicycle / car (< 7,5 km)

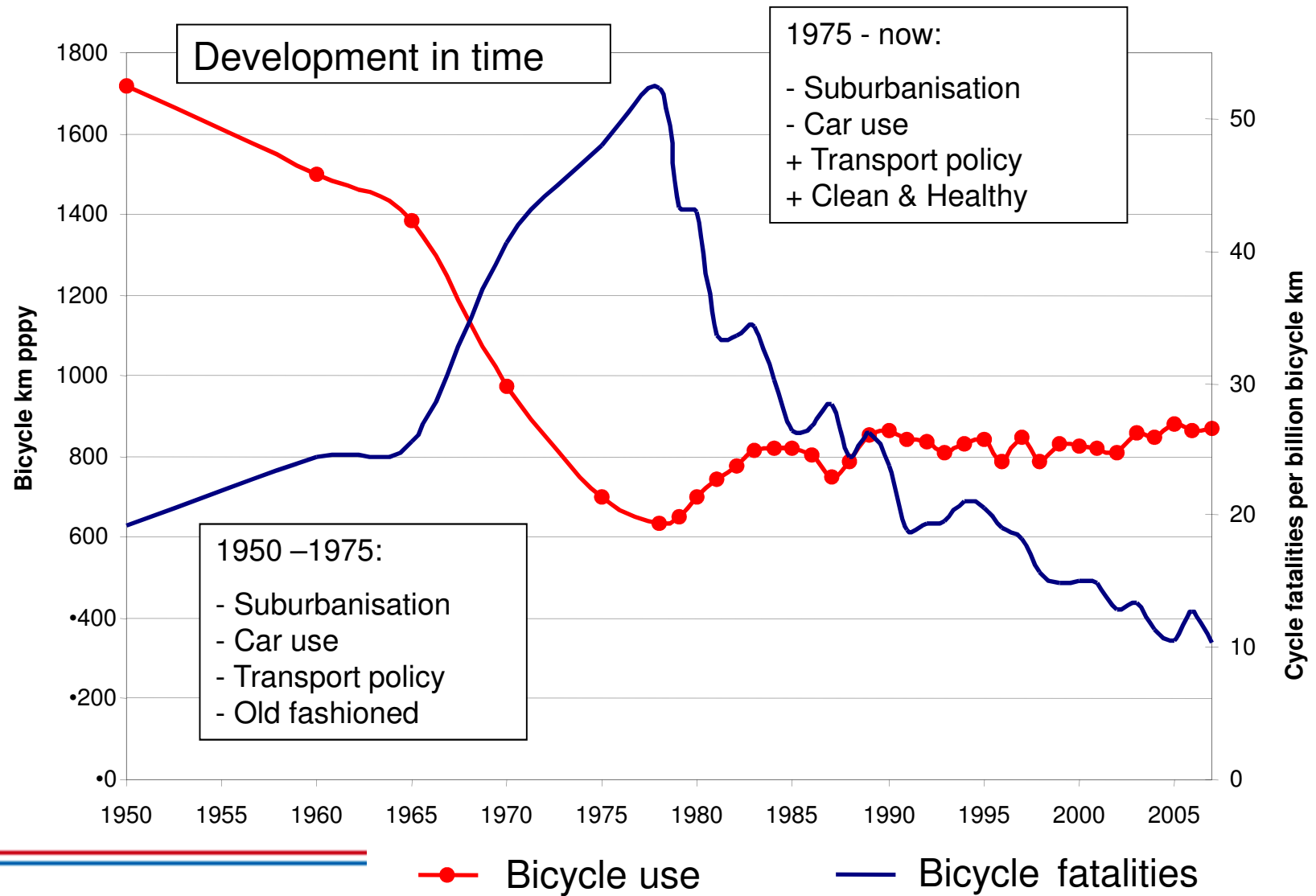
	Never car	Sometimes car, sometimes bicycle	Never bicycle
Shopping	12%	59%	30%
Transporting children	6%	70%	24%
Sports & visits	28%	41%	30%
Going out	12%	48%	39%
Commuting	29%	40%	31%

Modal split according to distances

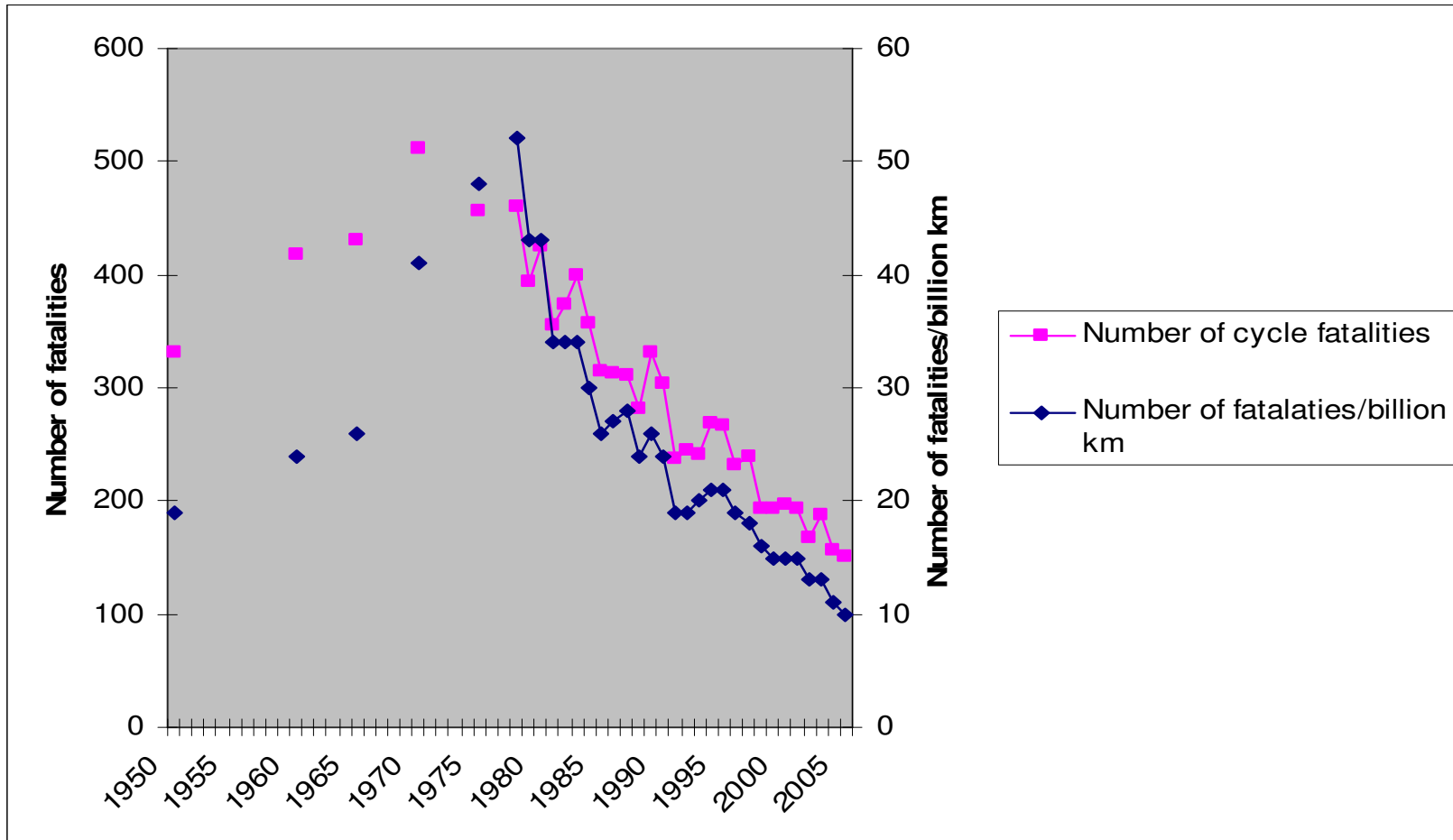


Source: RWS/AVV 2005 /MON 2005

Safety and bicycle use



Safety: fatalities and risk



Safety by numbers

Killed cyclists
per 100 million km

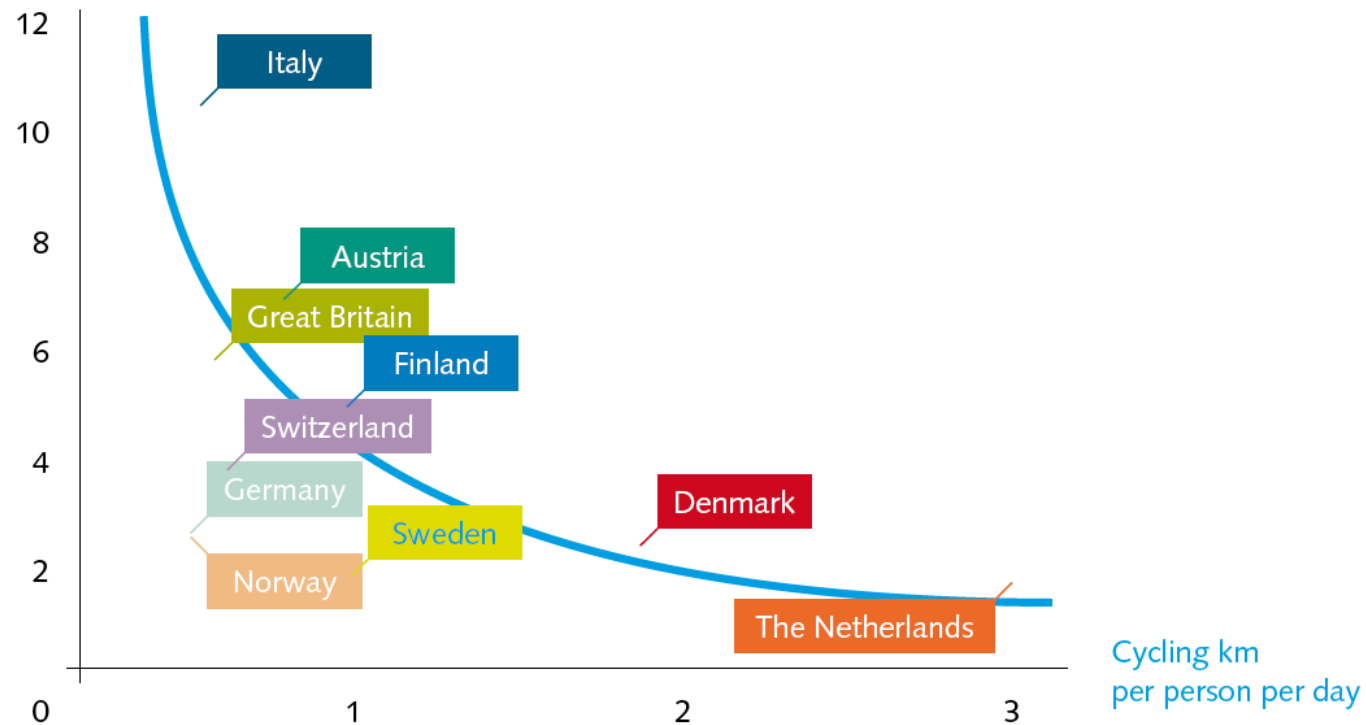
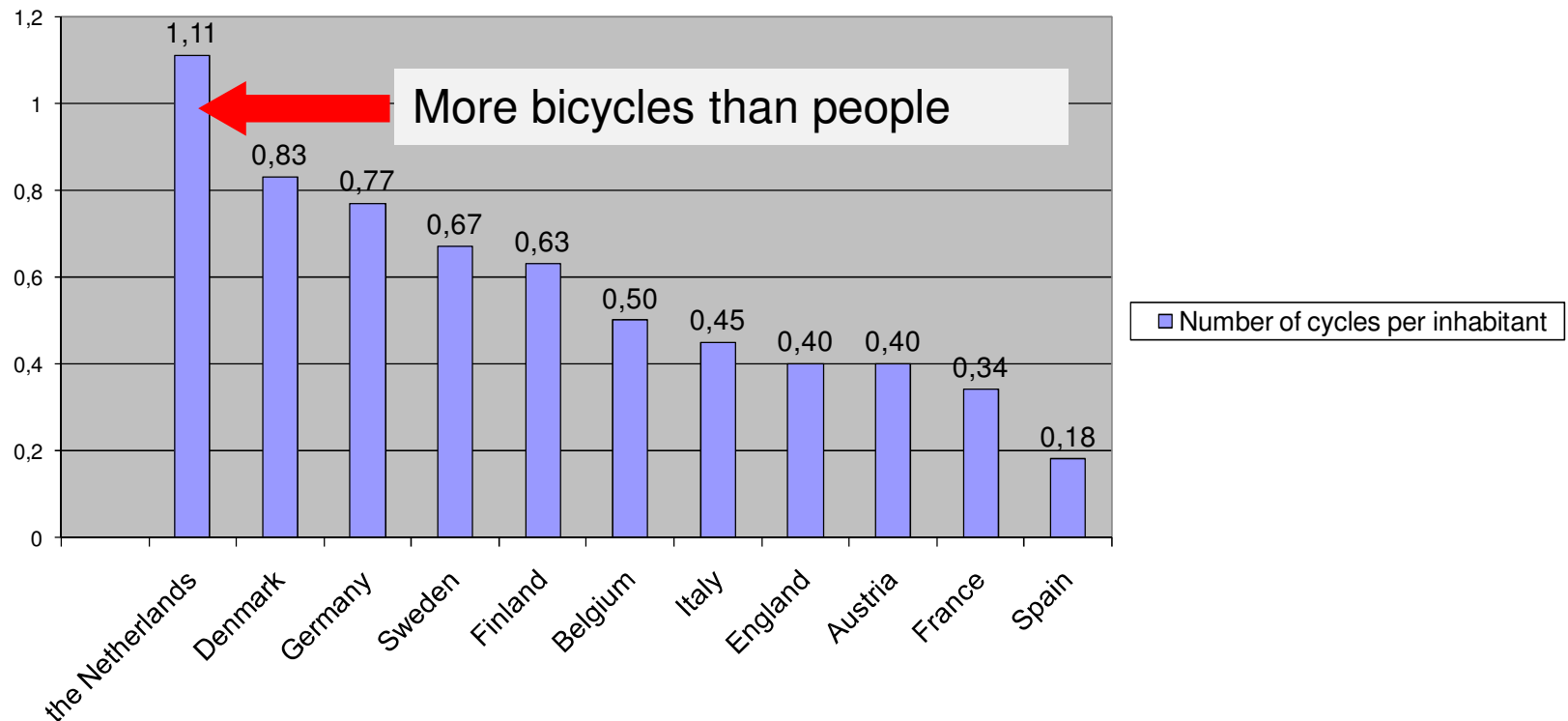
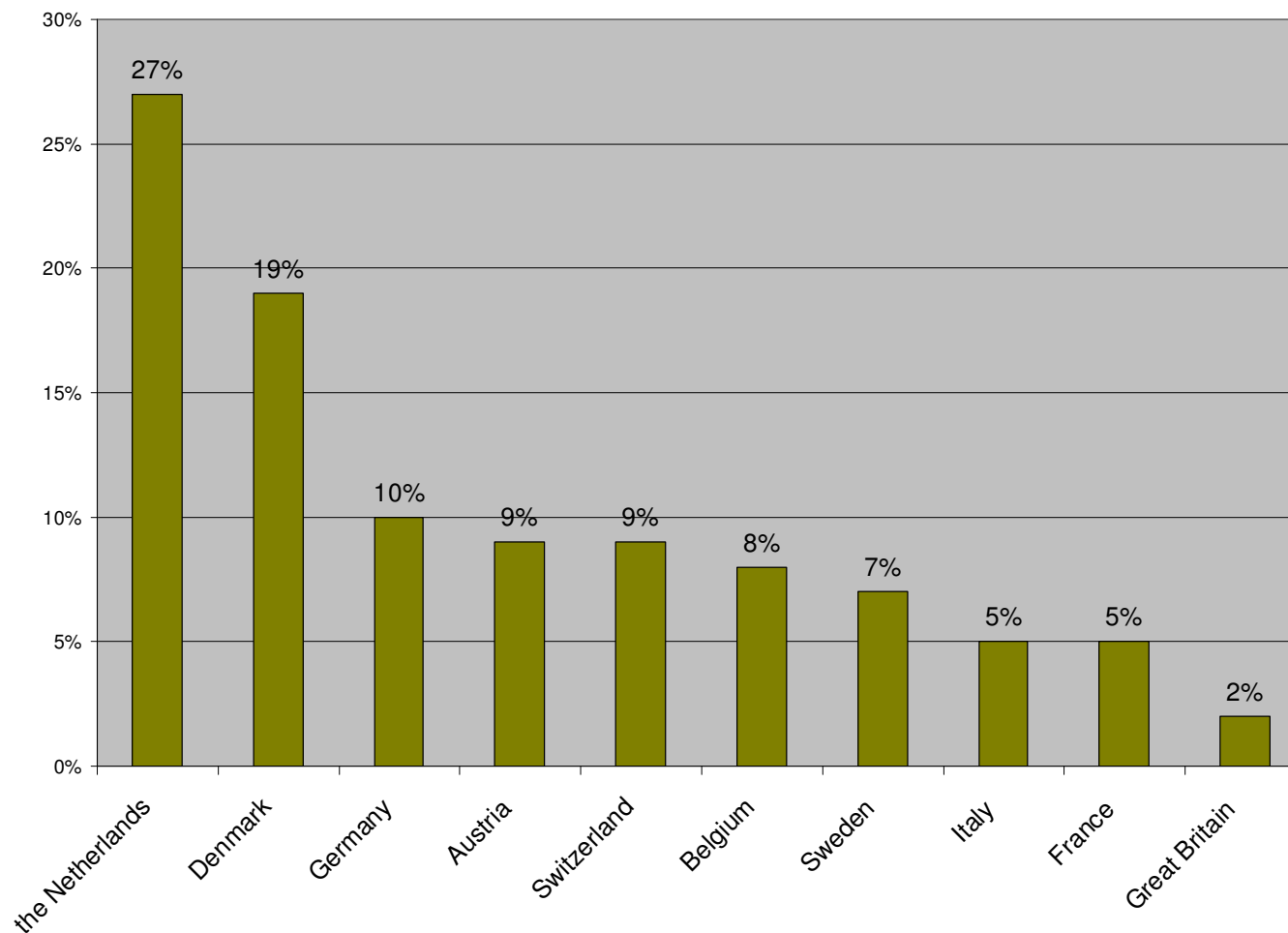


Figure 8: Relation between accidents and bicycle usage

Number of cycles per inhabitant



Bicycle share in European countries



Cycling-inclusive policy development

Legal context

- > High way code (RVV)
 - > Traffic signs
 - > Behaviour road users
- > Administrative regulations (BABW)
 - > Procedures for road authorities
- > Planning law traffic and transport
 - > Defines relationship between national, provincial and local transport plans

Hierarchy of plans

Mobility Policy Document (national)



Provincial traffic and transport plan



Regional traffic and transport plan



Municipal traffic and transport policy

Essential
policy
elements

Essential policy elements

- > Stimulate use of bicycles (7,5 km)
- > Bicycle route networks
 - > Meet quality requirements
- > Appropriate parking facilities
 - > Location & quality
- > New developments well connected
- > Reduction of bicycle theft
- > Be alert for new barriers

Corner stones of Dutch cycling policies

- > Cycling: fully fledged mode of transport
- > Looking for the 'optimal mix'
 - > Utilizing strengths of each mode of transport
 - > Providing alternatives for 'problematic use'

Looking for the optimal mix

Cycling (& walking)

- > Short distances
- > Inner urban trips
- > Limited luggage carrying

Public transport

- > Longer trips
- > Mass transportation
- > Feeder trips required

Car

- > Longer trips
- > Thinly populated areas
- > Less/not suitable for dense urban areas

Why cycling?

Distinguish between

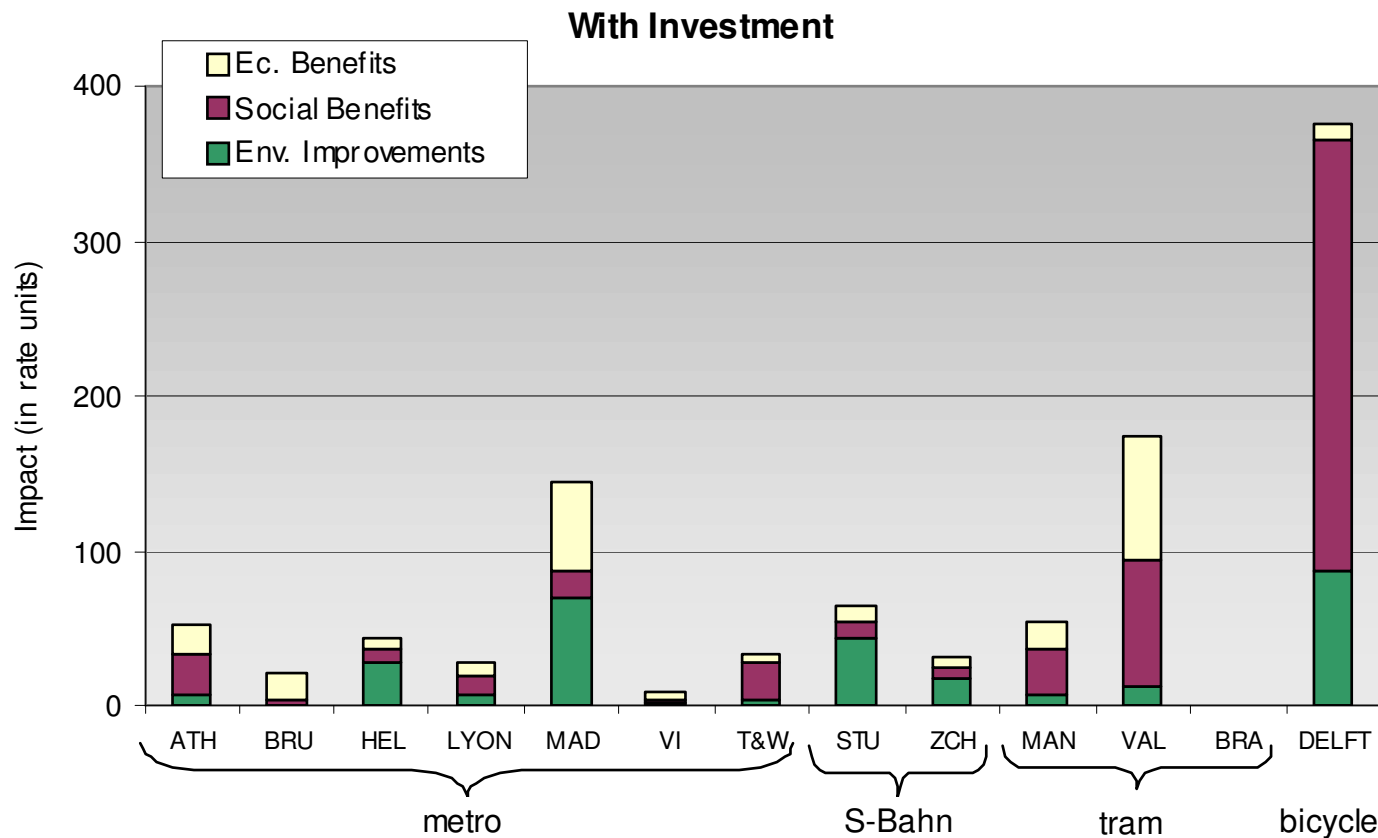
- > Society
 - > Policy makers / politicians
- > Individuals

Policy makers / politicians

Societal benefits:

- > Urban quality
- > Easing congestion
- > Improving accessibility
 - > for all categories of road users
- > Environment & climate
- > Public health costs
- > Economy
- > ...

Return on urban transport investments, bicycle versus PT



Source: Transecon-project

Individuals

- > ...don't cycle for the environment!!
- > Practical, efficient and convenient (and fun!)
- > Safety *perception*
 - > Might be an obstacle
- > Health and fitness
- > (Cheap)

So the challenge is...

- > ...to make cycling
 - > Convenient
 - > Practical
 - > Safe

Planning and design for cycling

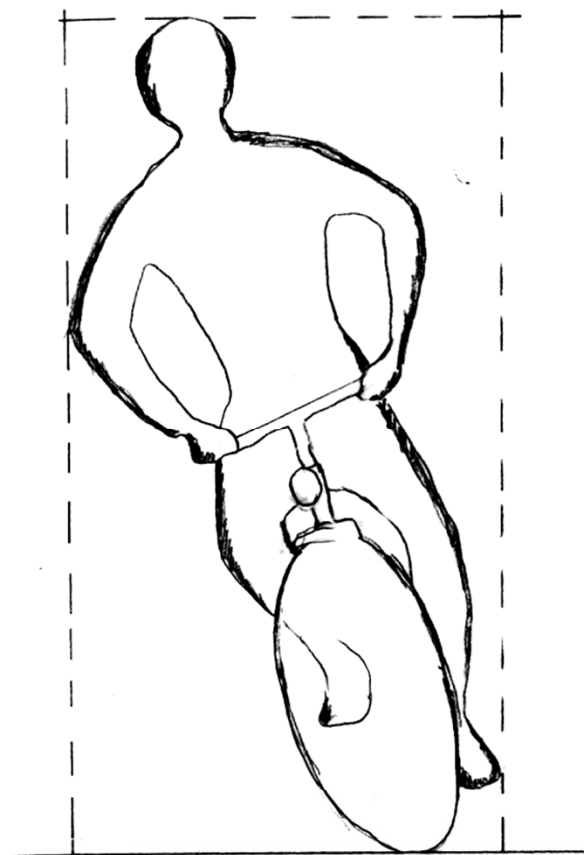
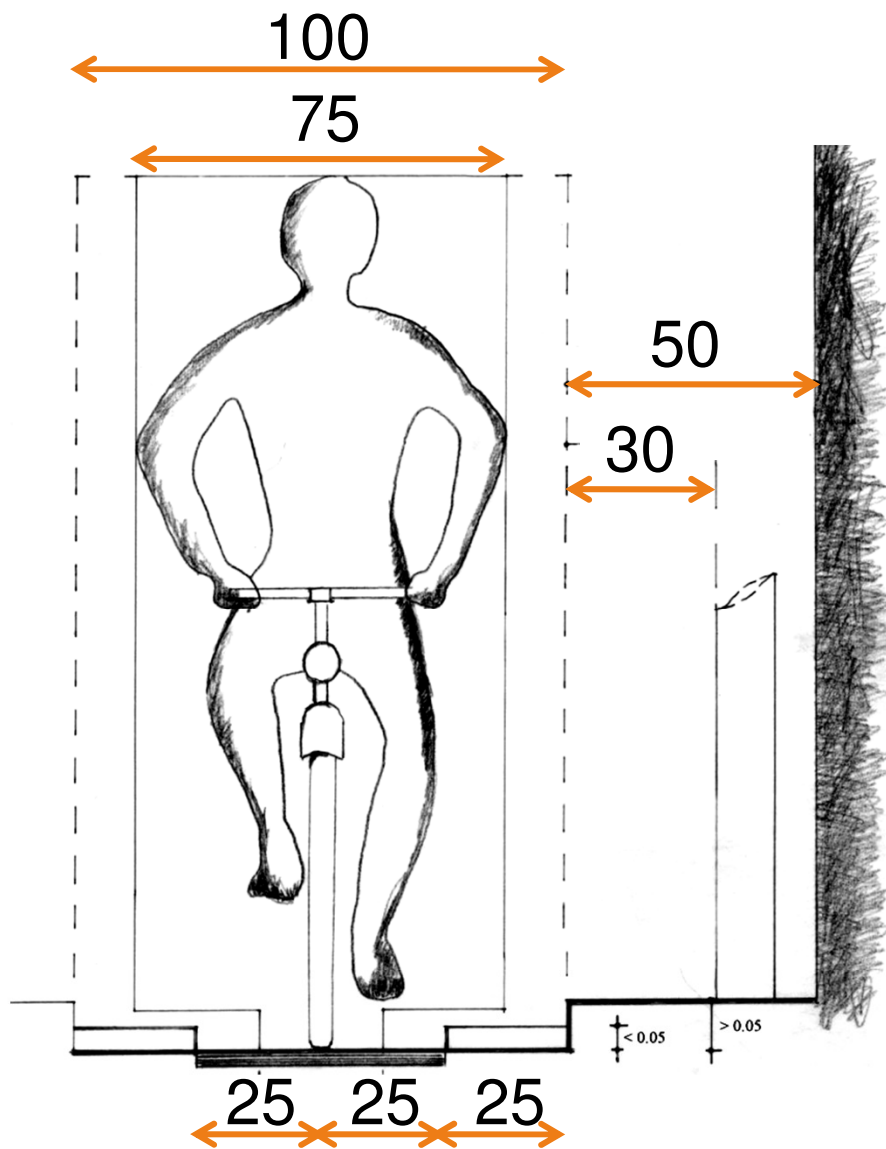
Functional Road Design

- > Road functions
 - > Flow
 - > Distributor
 - > Access
- > Balancing function, shape and use

Cyclist as starting point

- > Human powered
- > Balancing
- > Vulnerable
- > No (or: little) suspension
- > Open air
- > Social being
- > Limits to complexity

- > Profile of clearing space







Main requirements

- > Coherence
- > Directness
- > Attractiveness
- > Safety
- > Comfort

Coherence

- > Connectivity
 - > Origin > destination
 - > Completeness
- > Recognisability
- > Continuity
- > Signposting



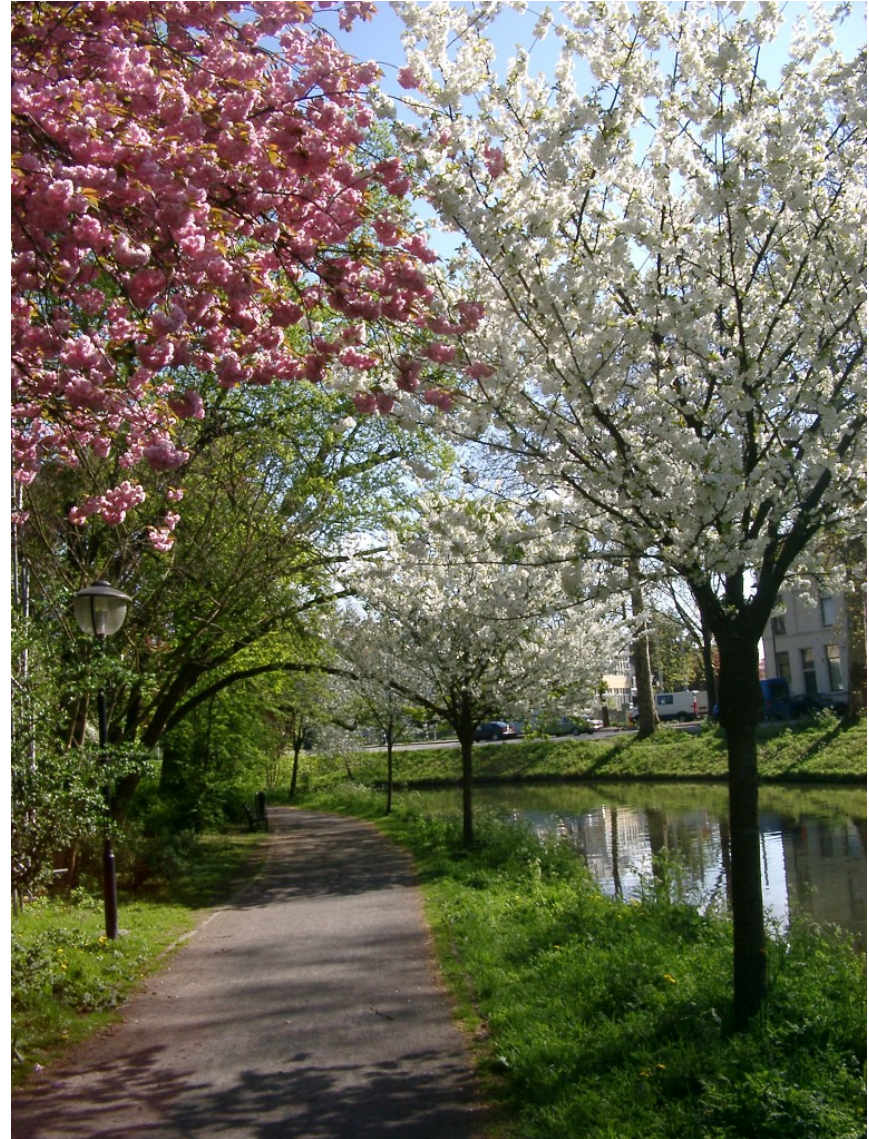
Directness

- > Minimise detoures
 - > Fine meshed cycle network
 - > Two directional road sections
- > Minimise delays
 - > “Crossability”
 - > Traffic light optimatisation



Attractiveness

- > Pleasant surroundings
 - > Small scale & variation
 - > Shading
- > Minimum stress
- > Social security
 - > Presence of people
 - > Lighting



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Safety

- > Minimise conflicts
 - > E.g. segregation
- > Minimise outcome of conflicts
 - > E.g. traffic calming
- > Allow for interaction between road users
 - > E.g. make sure they see each other
- > Provide safety margins
 - > E.g. don't add up minimum widths

Basic principles for cyclist safety

- > High speeds and flows > segregation
- > No segregation > traffic calming
- > Predictable/simple manoeuvres
 - > Avoid complexity









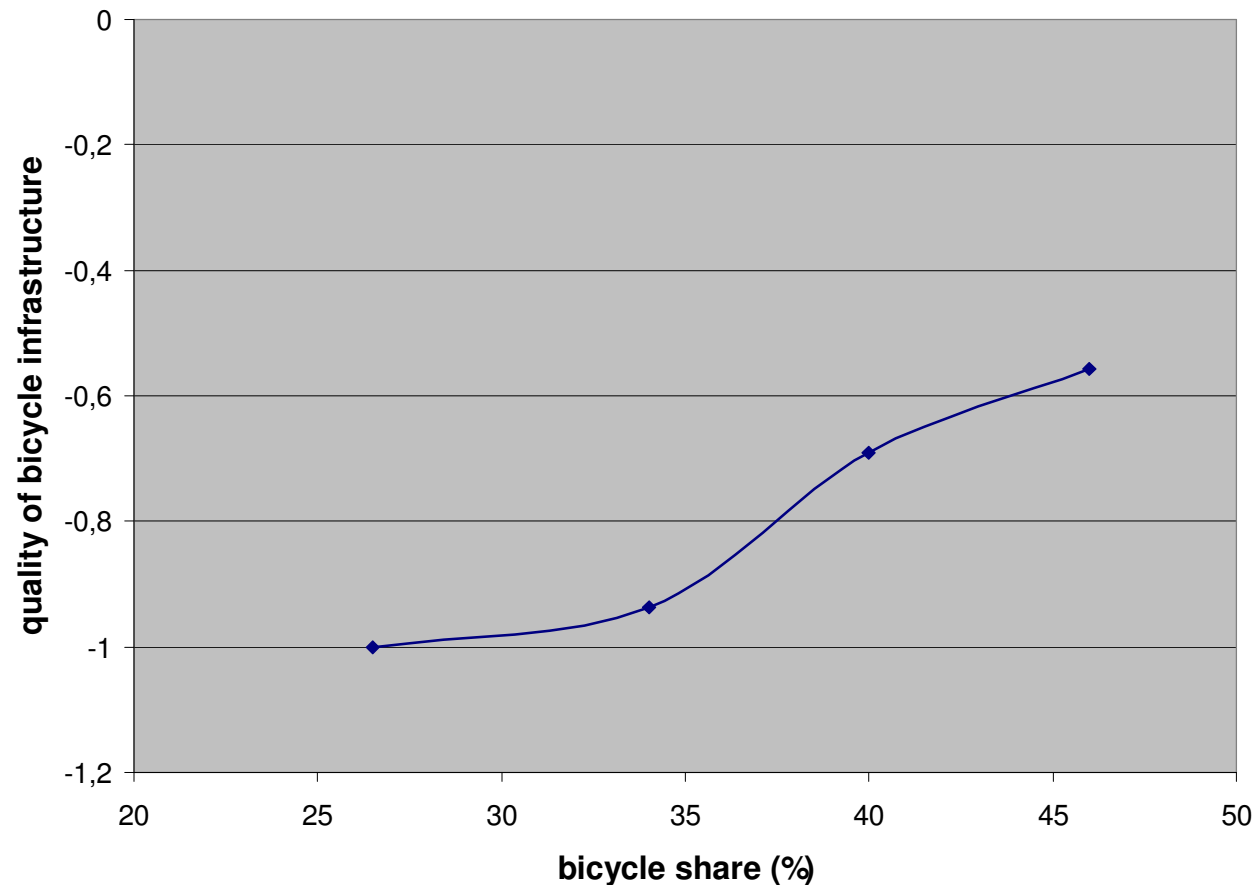
Comfort

- > Minimise energy consumption
 - > Number of stops
 - > Smooth road surface
 - > Minimise gradients
- > Make riding easy
- > Avoid uncomfortable manoeuvring



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More quality infra, more cycling





Content

- > Functional design principles
- > Basic information
- > Networks and routes
- > Road sections
- > Intersections
- > Design, maintenance and furnishings
- > Bicycle parking
- > Evaluation and management

Bicycle parking



Why a bicycle parking policy?

- > No cycling without parking
 - > Provide service to *existing* cyclistst
- > Good facilities on the right spot
- > Quality of public space
- > Prevention of theft and vandalism
- > Modal shift
 - > Good facilities: more people cycling

Quality requirements

User needs

- > At the right spot (close to home or destination)
- > Easy to use (ergonomics)
- > Not hurting the user
- > ...or damaging the bicycle
- > Protection against theft
- > Protection against vandalism
- > Weather protection
- > Durable
- > Preferably for free or at low cost

Offer various options

- > Secured
 - > Guarded
 - > Lockers
 - > Automatic systems
- > Free parking
- > Users can trade off pros and cons
 - > Costs, walking distance, protection

Quality requirements

Managerial considerations

- > Efficient use of space
- > Easy maintenance
- > Esthetics of public domain

Space efficiency can be an issue!



Secured bicycle parking

Indoor
guarded



Guarded parking



Secured bicycle parking



Renovated
facilities:
Better
ergonomics

Security

Lockers and boxes



Weather protection



Quality mark bicycle parking systems





Some
examples
of
approved
systems



Intermodality

Quality in door-to-door service



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Bicycle & Public Transport

Complementary modes

Only ***combined strengths*** can compete with private motorised traffic

Cycling system characteristics

Strengths

- > Flexible
- > High penetration ability
(access to individual addresses)
- > Fast on short distances
- > Uses little space for parking

Weaknesses

- > Limited radius of action

Public Transport system characteristics

Strengths

- > High people carrying capacity
- > Proper for longer trips
- > Space efficient

Weaknesses

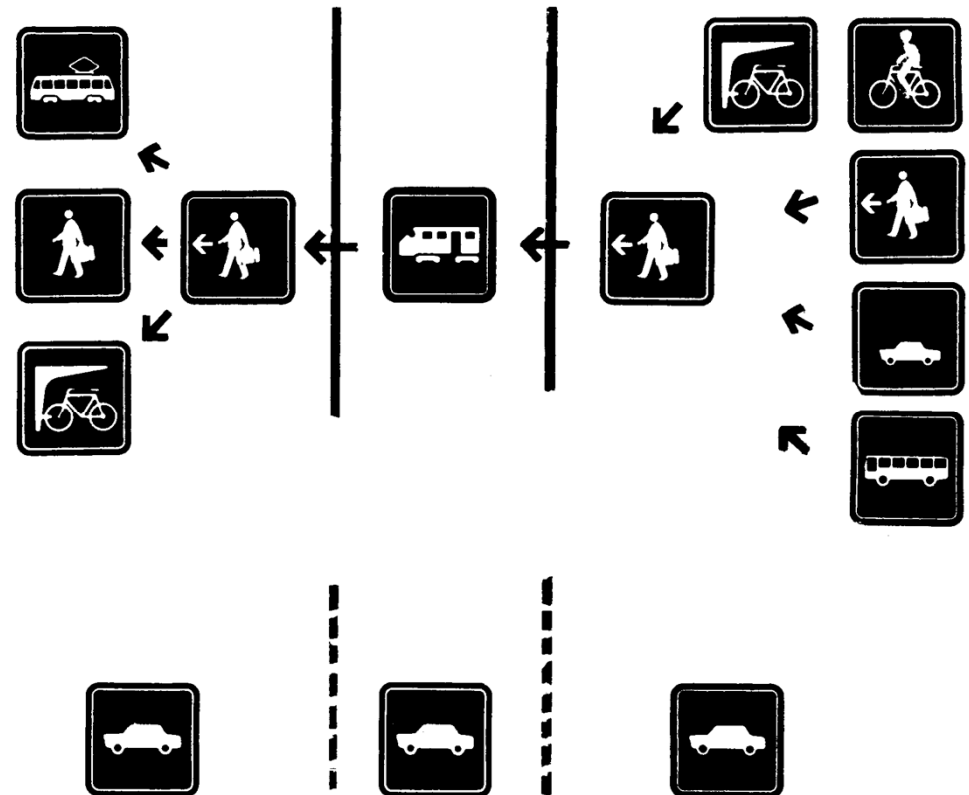
- > Inflexible
- > Low penetration ability
- > Requires feeder systems

Concept of 'trip chain'

> People travel door-to-door

Each PT trip is a chain...

...with at least three links

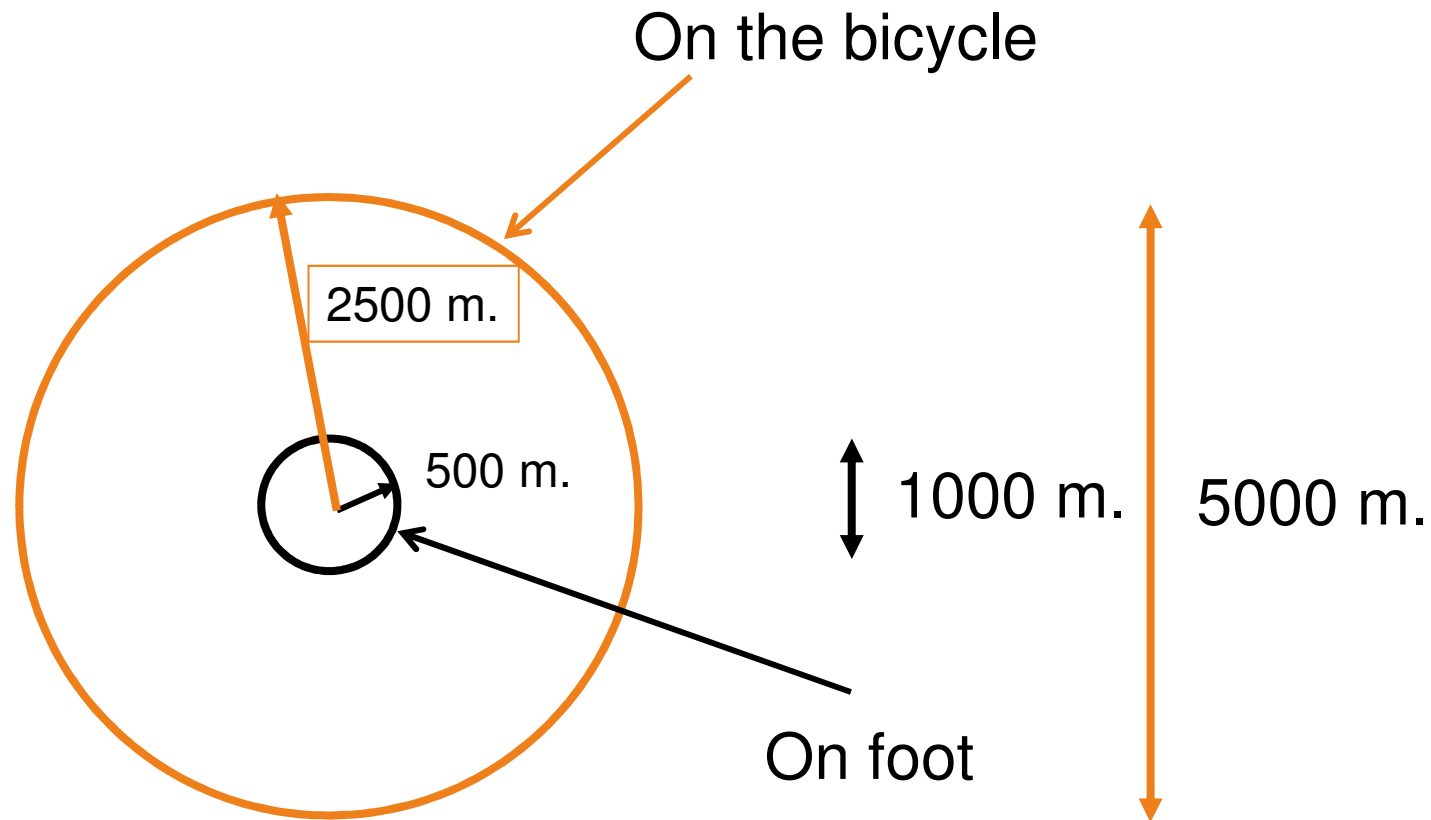


Feeder trip to NL railway stations

	Access trip (home – station)	Egress trip (station- destination)
Walking	24,2 %	47,7 %
Bicycle	38,9 %	12 %
Bus	23,2 %	26 %
Passenger of Car	5,9 %	7,7 %
Car Motorist	7,2 %	2,3 %
Others	0,4 %	3,4 %
Taxi	0,5 %	1 %
total	100 %	100 %

> 60%

Enlargement of catchment area



Links to look at

access

> Access trip

transfer

> Transfer bicycle > public transport

> Parking

> 'Roll on roll off'

**public
transport
ride**

> Public transport ride

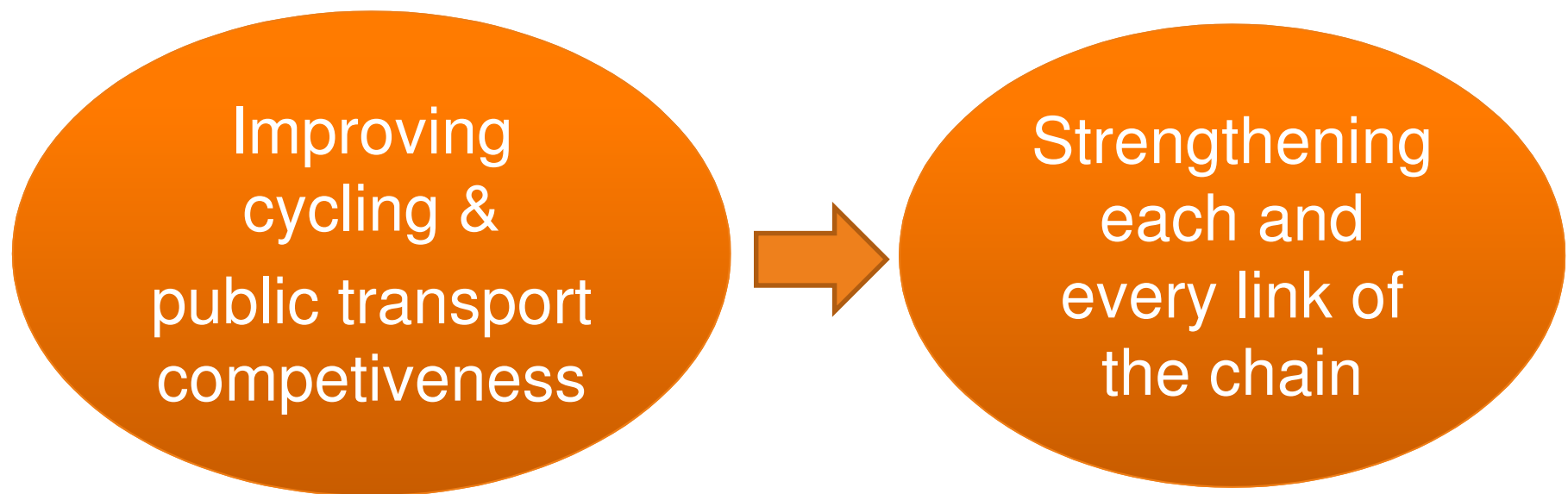
transfer

> Transfer public transport > bicycle

egress

> Egress trip

A chain is as strong as its weakest link!!



Services to accommodate intermodality

- > Right mix of bicycle parking facilities
 - > Free
 - > Secured
- > Bicycles on the train
 - > Outside rush hours
 - > Folding bicycles for free
- > OV-fiets services (public transport bicycles)
 - > Egress trips are largest challenge





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OV-fiets (PT-bicycle)

- > National public bicycles system
- > More than 100,000 subscribers
- > More than 1,000,000 trips
- > Improved availability bicycles for egress trips

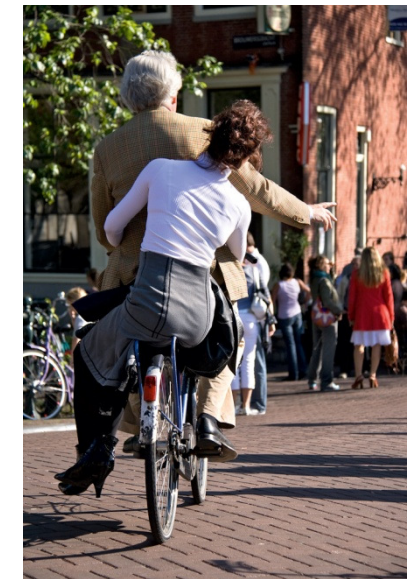


Other aspects of Dutch cycling culture





The Dutch



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Wide variety of accessories



Conclusion

The Netherlands

- > Tradition of cycling....
- > ...needs to be fostered
- > Supported by policies
- > Cycling infrastructure
- > Growing attention for bicycle parking
- > Public transport gains from cycling
- > Bicycles and accessories reflect utilitarian nature



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- > www.dutchcycling.nl
- > info@dutchcycling.nl